SEC.584

What is claimed is:

1. A multi-chamber system of an etching facility for manufacturing semiconductor devices comprising:

a cassette stage for mounting a cassette having wafers stacked thereon;

a transfer path adjacent to the cassette stage for providing space for transportation of wafers, the transfer path having a width slightly larger than a diameter of the wafers;

a plurality of processing chambers aligned with the transfer path; and

a transfer mechanism installed in the transfer path for loading and unloading the wafers stacked on the cassette stage to the plurality of processing chambers.

2. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 1, wherein the processing chambers are installed in multiple layers.

3. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 1, wherein each processing chamber has a gate formed on a side facing the transfer path, the gate being selectively opened and closed to allow passage of the wafers.

4. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 1, wherein a load lock chamber is connected to one side of the processing chamber, the load lock chamber serving as a stand-by area for the wafers.

5. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 4, wherein the load lock chamber comprises:

a transfer arm for receiving the wafers from the transfer mechanism and transferring the wafers to the processing chamber;

an inner transfer device for moving the transfer arm; and

gates formed on a side of the transfer path and a side of the processing chamber, respectively, the gates being selectively opened and closed to allow passage of the wafers.

6. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 5, wherein the transfer arm comprises a plurality of transfer arms for simultaneously transferring a plurality of wafers.

7. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 4, wherein the load lock chamber has a vacuum pressure generator for forming vacuum pressure therein.

8. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 4, wherein the plurality of processing chambers have one common load lock chamber.

9. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 1, wherein processing chambers are connected by gates such that wafers finishing one process in one processing chamber can be directly moved to another processing chamber for a subsequent process.

10. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 1, wherein the processing chambers have a vacuum pressure generator for forming vacuum pressure therein.

11. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 1, wherein the transfer mechanism comprises:

a transfer arm for selectively holding the wafers;

a transfer robot for loading and unloading the wafers into the processing chamber by moving the transfer arm;

a horizontal driving part for moving the transfer robot horizontally; and

a controller for controlling the transfer robot and the horizontal driving part by applying control signals thereto.

12. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 11, wherein the transfer mechanism further comprises a vertical driving part for moving the transfer robot vertically on receipt of a control signal from the controller.

13. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 11, wherein the transfer arm is provided with a vacuum line so as to vacuum-absorb the wafers.

14. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 11, wherein the transfer arm comprises a plurality of transfer arms which simultaneously transfer a plurality of wafers.

15. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 11, wherein the horizontal driving part comprises a motor or a pneumatic cylinder.

16. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 11, wherein the vertical driving part comprises a motor or a pneumatic cylinder.

17. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 1, wherein the transfer path is extended and the transfer mechanism comprises a plurality of the transfer mechanisms installed so as to transfer wafers from one transfer mechanism to another.

18. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 1, wherein the transfer mechanism transfers unprocessed wafers from a cassette mounted on a first cassette stage to one of the processing chambers, and processed wafers from another of the processing chambers to a second cassette stage which is located such that the wafers are easily transferred to a subsequent process.

19. The multi-chamber system of an etching facility for manufacturing semiconductor devices of claim 1, wherein the transfer path has a rectangular shape.

20. A multi-chamber system of an etching facility for manufacturing semiconductor devices comprising:

a cassette stage for mounting a cassette having wafers stacked thereon;

a transfer path adjacent to the cassette stage for providing space for transportation of wafers, the transfer path having a width slightly larger than a diameter of the wafers;

a plurality of processing chambers aligned in multi-layers parallel to and beside the transfer path; and

a transfer mechanism capable of vertical/horizontal reciprocal movement installed in the transfer path for loading and unloading the wafers stacked on the cassette stage to the plurality of processing chambers.

21. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 20, wherein the transfer path has a rectangular shape.

22. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 20, wherein the multi-layers of the processing chambers number 2 to 5 layers.

23. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 20, wherein a load lock chamber is connected to one side of the processing chambers, the load lock chamber serving as a stand-by area for the wafers.

24. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 23, wherein the load lock chamber comprises:

a transfer arm for receiving wafers from the transfer mechanism and transferring the wafers to the processing chamber;

an inner transfer device for moving the transfer arm; and

gates formed on a side of the transfer path and a side of the processing chamber, respectively, the gates being selectively opened and closed to allow passage of the wafers.

25. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 24, wherein the transfer arm comprises a plurality of transfer arms for simultaneously transferring a plurality of wafers.

26. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 20, wherein the transfer mechanism comprises:

a transfer arm having a vacuum line so as to selectively vacuum-absorb the wafers;

a transfer robot for loading and unloading the wafers into the processing chamber by moving the transfer arm;

a vertical driving part for moving the transfer robot vertically;

a horizontal driving part for moving the transfer robot horizontally; and

a controller for controlling the transfer robot, the vertical driving part, and the horizontal driving part by applying control signals thereto.

27. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 24, wherein the transfer arm comprises a plurality of the transfer arms which simultaneously transfer a plurality of wafers.

28. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 26, wherein the vertical driving part and the horizontal driving part each comprise a motor or a pneumatic cylinder.

29. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 19, wherein the transfer path is extended, and the transfer mechanism comprises a plurality of transfer mechanisms installed so as to transfer wafers from one transfer mechanism to another.

30. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 19, wherein the transfer mechanism transfers unprocessed wafers from a cassette mounted on a first cassette stage to one of the processing chambers, and processed wafers from another of the processing chambers to a second cassette stage which is located such that the wafers are easily transferred to a subsequent process.

31. A multi-chamber system of an etching facility for manufacturing semiconductor devices comprising:

a first cassette stage for mounting a cassette having unprocessed wafers stacked thereon;

a transfer path adjacent to the first cassette stage, the transfer path having a rectangular shape and providing a space for transportation of wafers;

a plurality of processing chambers arranged in multi-layers and aligned in parallel beside the transfer path;

a transfer mechanism capable of vertical/horizontal reciprocal movement installed in the transfer path for loading and unloading the wafers stacked on the first cassette stage to the plurality of processing chambers; and

a second cassette stage placed opposite to the first cassette stage and mounting a cassette having processed wafers stacked thereon.

32. The multi-chamber system of an etching facility for manufacturing semiconductor devices according to claim 31, wherein the transfer mechanism comprises:

a transfer arm having a vacuum line for selectively vacuum-absorbing wafers;

a transfer robot for loading and unloading wafers to the processing chambers by moving the transfer arm;

a vertical driving part for vertically moving the transfer robot;

a horizontal driving part for horizontally moving the transfer robot; and

a controller for controlling the transfer robot, the vertical driving part, and the horizontal driving part by applying control signals thereto.